



Focus on Forensics



OCTOBER 2015

SPECIAL POINTS OF INTEREST:

- Get details about the sexual assault initiative
- The continuing lab history series focuses on “serology”
- Follow the evolution of the sexual assault evidence collection kit
- Sign up now for the Laboratory Basics workshop!

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In light of the recent news reports regarding the sexual assault kit backlog nationwide and Kentucky’s own investigation into the backlog, this newsletter is devoted to providing information on Sexual Assault Evidence Collection Kit (SAECK) testing. We hope to provide information on how the KSP laboratory plans to address the backlog as well as to provide useful information to those of you dealing with investigations or the legal side of those cases.

Submit the Kit- KSP’s Sexual Assault Kit Initiative

Kentucky State Police Forensic Laboratory Receives \$1.9 Million to Clear the Shelves and Analyze the Sexual Assault Collection Kits (SAECK) from All Kentucky Law Enforcement Agencies.

The Kentucky State Police Forensic Laboratory has been awarded more than \$1.9 million to outsource and analyze up to 3,300 backlogged sexual assault kits. This grant funding, provided from the District Attorney of New York County (DANY), comes as part of the \$38 million grant (with funds from forfeitures) that will assist 20 states facing sexual assault evidence backlogs. Additionally, the Bureau of Justice Assistance will provide \$41 million in similar funding.

How It Began

In 1999, New York City discovered approximately 17,000 sexual assault evidence collection kits (SAECK) in their storage facilities. From 2000 to 2003 they were able to eliminate this backlog, which resulted in 49 indictments. They have now vowed to assist other jurisdictions to eliminate sexual assault backlogs and prevent future backlogs. The City of Detroit discovered a similar problem of more than 11,000 kits in 2009. They proceeded with analysis of these kits (currently 10,000) resulting in 2,478 matches in the Combined DNA Index System (CODIS) including the identification of 469 serial rapists and have obtained 21 convictions. In 2010, Illinois signed into law the Sexual Assault Evidence Submission Act which resulted in the receipt of 4,000 previously untested kits (as of 2013) from which there were 927 CODIS matches. In 2013, the City of Houston discovered more than 6,000 kits, analysis of which has resulted in 850 CODIS matches. The stories go and on and on— now with your help, the KSP Forensic Laboratory will begin the process of eliminating the SAECK backlog in Kentucky.

More than a decade ago, the KSP Forensic Laboratory started receiving federal funding to assist with the processing of backlogged cases. Initially, the funding was limited to sexual assaults with unknown suspects and throughout the years now encompasses any backlog case. As these changes occurred, we encouraged the submission of all sexual assault cases in order to prevent having hundreds, or even thousands, of kits on the shelves of the more than 450 agencies which the KSP Laboratory serves. However, we now realize this may not have been understood by all of the jurisdictions we serve.

Because of what we had observed from other jurisdictions in the nation, KSP Forensic Laboratory personnel began requesting information from some of the larger Kentucky agencies in 2012 to determine what, if any, backlog of previously un-submitted SAECK existed. In 2015, the Kentucky Legislature passed Senate Joint Resolution 20 (sponsored by Senator Harper-Angel) directing the Kentucky’s Auditor’s Office to conduct an audit and determine how many un-submitted kits are still on the shelves of Kentucky law enforcement agencies. In the [audit report](#) State Auditor Adam Edelen indicates that 3,090 sexual assault kits are awaiting testing statewide, both on the shelves of law enforcements agencies and at the lab. The grant funding obtained by the laboratory allows for up to 3,300 kits to be tested, so this backlog should be eliminated using the DANY grant funding.

Submit the Kit- KSP's sexual assault kit initiative *continued*

845 previously untested rape kits have been submitted to the KSP laboratories, a combination of kits requested by the laboratory for submission since the start of our 2012 inquiry and those located by agencies as a result of the audit inquiry. No information was available from the auditor's office when the grant request was prepared, so we relied upon information provided directly by agencies to estimate 3,300 backlogged kits state-wide. As indicated by the differences in these numbers, the majority of these cases are still in the possession of the Law Enforcement Agencies. We can't work them until they are submitted.

Some of the Benefits

Besides the obvious benefit that testing all rape kits provides answers to each victim, there are additional benefits to consider. If a DNA profile from a potential suspect is obtained from analysis of evidence in the kit, the DNA profile will be entered into the CODIS database and routinely searched. The profile from this case may be linked to an offender or to a case with a known suspect. The profile may be linked to a case with an unknown suspect or to multiple unknown suspect cases, indicating a possible serial event. Because DNA profiles are routinely searched, these links may occur instantly or a profile may be searched for years before a match is made. All scenarios provide additional information to law enforcement and may even exonerate someone wrongly accused.

Training

In order to ensure that Law Enforcement Agencies of Kentucky are aware of the types of analysis available from the Kentucky State Police Laboratories, one day workshops will be held October 14 and November 17. Topics of this workshop will include the analyses available, case acceptance policies of each discipline, Q&A sessions, and a tour of the Central Laboratory facility. (See: [Lab Basics](#))

How Can You Help?

The DANY grant will offer a one time opportunity to clear the shelves and analyze the backlogged SAECK currently in the possession of Kentucky Law Enforcement Agencies. The KSP Forensic Laboratory's case acceptance policy has been revised and we are encouraging each Kentucky agency with a backlog of previously un-submitted kits to contact the laboratory and make an appointment for the submission of these kits with the Forensic Biology Casework Supervisor.

Any kit not previously submitted to the laboratory should be submitted (e.g. any sexual assault including stranger rapes, acquaintance rapes, rape for which the victim was unsure of events, unfounded rapes, rapes where prosecution was previously declined, rapes by means of coercion, rapes in which the victim is no longer willing to cooperate, adjudicated rapes, etc.). The only exception being cases in which the victim has recanted without coercion. A recanted statement would be that the victim advises that no rape actually occurred (to the extent that the victim could be charged with providing a false report). Cases in which a victim is no longer cooperative do not meet this exception as it is not the same as if a victim recants their accusation.

You should also re-submit any kits that meet the following criteria: kit was requested to be returned unexamined, positive serological results that were not forwarded for DNA analysis, or evidence was forwarded but analysis was suspended prior to DNA analysis commencing. **PLEASE NOTE: Additional information will be needed prior to resubmission of these kits. If your agency has such cases, an inventory request form can be emailed to your jurisdiction upon request.**

In order to assist the laboratory in determining the current status of a case, we request the following when submitting SAECK. Cases considered inactive by your agency that would have otherwise not been submitted to the laboratory prior to this request should be marked as "**INITIATIVE**" on the KSP 26 Form (Request for Evidence Examination). Initiative kits will be outsourced to a vendor laboratory in an effort to limit the impact of turn-around time for currently active cases. Cases which are considered active for your agency or in the court system should be marked as "**General Rotation**" on the KSP 26 Form. General Rotation cases will not be outsourced. If an Initiative case becomes a General Rotation case, the laboratory should be contacted to advise of a status change. All future SAECK should be submitted to the laboratory (with the exception of cases where the victim recants without coercion) and distinguished as Initiative or General Rotation to assist in triaging based on their status.

If you have any questions please contact the Forensic Biology Casework Supervisor, Whitney Collins at 502-564-5230 ext. 212 or email Whitney.Collins@ky.gov.

History of the Lab— Part 3 Serology

Considering the sexual assault kit initiative that is underway it seems appropriate to focus on the portion of lab history that deals with sexual assault kits—serology. The laboratory started serological analysis around 1970 with one analyst, Jim Porter, whose tenure was short. In the early 1970s the staff was increased by the addition of Larry Ayres in 1972 and Pat Hankla in 1973.

The early years of serology were quite groundbreaking. There were no extensive training programs, no standard protocols to follow, no ability to search the internet for the latest info. The pioneering serologists basically had to find procedures in the printed scientific literature and attempt to reproduce them in the lab. They traveled to other laboratories—such as the Minneapolis Bureau of Criminal Apprehension and the Wisconsin State Crime Lab—to learn from trained scientists there, and the FBI provided some training classes. Once they learned a new technique they tested to ensure it worked properly, gave no false positives or negatives, and then implemented it into their standard routine.

Development was quite rapid from the start of the serology lab through the 1970s. By the end of the decade techniques were in place to test blood, semen, saliva, urine, bloodspatter, hair and fibers. Hair and fibers have since been moved out of serology into the trace discipline. Those early tests could identify blood, tell if it was human or animal, and in some cases what type of animal deposited the blood. Blood could be tested for ABO type and some enzymes. Early ABO testing involved growing antibodies in rabbits at the game farm, now called the Salato Center, in Frankfort. No animals were harmed in the process but at least one kindhearted serologist, who is a pro at taking blood from humans, often nearly passed out during the blood draw on the rabbit.

Semen could be identified microscopically as human in origin. In some cases, if the semen was not of human origin, the animal source could be identified. While microscopic identification was definitive it was often a challenge to find the location of semen on items of clothing. The serologists found a method used in the United Kingdom that allowed them to search for acid phosphatase, an indicator of semen, on items of clothing and pinpoint the location. They reproduced this technique and validated it for use in the KSP lab. A test for p30, also a constituent of semen, was used to identify semen when no sperm cells were present.

While much could be done to locate and identify semen not many options were available to identify a suspect. This would remain the case until the late 1980s. At that point the FBI began work on a DNA testing technique known as Restriction Length Fragment Polymorphism (RFLP). A KSP laboratory serologist, Lucy Davis, was accepted as one of the first visiting scientists with the FBI and began work on RFLP. She then brought the technique back to the KSP laboratory where it was fully implemented by 1990. In those days, if a suspect standard was submitted, DNA testing could definitively exclude or include a suspect, which was provided with a statistical interpretation for use in court. By the end of the decade the laboratory had transitioned to Polymerase Chain Reaction (PCR) technology, which requires much smaller amounts of sample and is still in use today.

A great enhancement for aiding forensic investigations during this era was the development of the Combined DNA Index System (CODIS) and the establishment of the National DNA Index System (NDIS) in 1994, which allowed DNA profiles to be stored and searched. This capability coupled with the addition of profiles from certain convicted offenders as states passed laws allowing those to be maintained was a huge advancement in criminal investigation, especially sexual assaults. By the end of the 1990s Kentucky had joined the NDIS allowing its DNA profiles to be searched nationwide.

While streamlined and more efficient, many of the early methods for the detection of blood, saliva and semen are still in use today. We have moved away from the term “Serologist” and now use “Forensic Biologist” to describe analysts dealing with serological and/or DNA analyses. Advances in Forensic Biology continue, but without the work of those serologists who came before us the “Submit the Kit” initiative would not be possible. Between the use of modern DNA techniques and the searching capabilities of CODIS, we expect great things from this project.

Special thanks to Larry Ayres and Pat Hankla for sharing their knowledge of the beginnings of the serology section.

Evolution of the Sexual Assault Evidence Collection Kit (SAECK)



While most law enforcement officers are familiar with the standard Sexual Assault Evidence Collection Kit (SEACK), it was not always in the form we see it today. Currently, kit components are dictated by the laboratory and are assembled by an outside company specializing in kit development. Not so in the early days! The serologists found they often did not have enough evidence to do the necessary testing, and they were determined to make a change. They worked with the head of emergency services at the University of Kentucky to ensure that both the medical personnel and the laboratory had all the necessary components and created their own SAECK. Those kits were “hand made” with serologists labeling envelopes, adding the necessary number of swabs and assembling it all into its own sealable “can”.

The photo depicts several generations of SAECK used by the KSP lab. The earliest from the 1970s is the round canister, which was the only kit “hand made” by lab staff. The next generation consisted of pink and blue boxes for collection of evidence from a victim or suspect. The current kit is a white “gender neutral” box and can be used for male or female sexual assault victims.

While kits have been through many generations and versions, the basic components have been the same. Since the early 1990s lab personnel have worked closely with the Sexual Assault Nurse Examiners (SANE) to develop a kit that provides ample evidence for analysis while being as compassionate as possible for the victim. The current kit (including instructions and a

doctor’s report) is much more streamlined and efficient for use by doctors and nurses, as well as by the laboratory analysts.



Lab Basics

On October 14th and November 17th the laboratory will host workshops designed for officers to provide a better understanding of what the lab can do for an investigation. The training will not only cover sexual assault cases but all aspects of laboratory analysis—trace, firearms, toxicology and controlled substances. We will have a guest speaker on sexual assault cases, explore case acceptance policies of each discipline, have a Q&A session and provide a tour of the Central Laboratory facility.

The workshop will be held in Frankfort from 9am to 3pm. Space is limited so please contact Laura Sudkamp (laura.sudkamp@ky.gov or 502-564-5230) today to reserve your slot!

Resources on SAECK Process and Backlog

[NIJ Five Things About Sexual Assault Kits](#)

[DANY National Rape Kit Backlog Elimination Program](#)

[Kentucky Association of Sexual Assault Programs](#)

Laws about the [SAECK Backlog](#)

[Sexual Assault Nurse Examiners](#) programs

NIJ [SAECK Using Science to Find Solutions](#)

Destruction of Biological Evidence

The auditor’s report once again brings to light the topic of evidence destruction. This has been addressed in a previous newsletter, but since there are statutory limitations on the destruction of biological evidence, it’s worth repeating. Please see http://www.kentuckystatepolice.org/for_lab/download/Lab_Newsletter_10_14.pdf page 5 for full details.

Submission of Biology Evidence

Forensic Biology evidence is shared among four laboratories around the state for serological screening. Please see the list below and submit evidence based on the KSP Post region in which your county is located:

Post region (counties)	Evidence goes to laboratory
1, 2, 3, 16	Western Regional Laboratory- Madisonville
4, 5	Jefferson Regional Laboratory- Louisville
6, 8, 14	Northern Regional Laboratory- Cold Springs
7, 9, 10, 11, 12, 13, 15	Central Laboratory- Frankfort

Once evidence is screened the regional laboratory analyst will forward items needing DNA testing directly to the Central Lab.

For questions on submission locations for other evidence types contact Matthew Clements (matthew.clements@ky.gov).

Case Acceptance Policy

Do you know how many items can be submitted per case for serology/DNA testing? Does that number vary based on the type of case? What about reference standards from the victim and suspect, are they important? How are cases prioritized by the lab? For answers to these questions and more see the case acceptance policies for serology and DNA testing starting on page 10 of the [Physical Evidence Collection Guide](#).

Submission of Sexual Assault Kits into the General Case Rotation

*The following excerpt is from the Forensic Biology Case Acceptance Policy Reference Standards section and are applicable to **General Rotation cases**:*

- I. The appropriate DNA reference standards are required prior to the starting of DNA analysis, generally from both victim(s) and suspect(s). Cases for which there is no suspect, when a suspect has fled, or when an investigating officer has attempted, but cannot obtain a warrant for the collection of a suspect's standard, may be exempt from this requirement. This information should be provided by the investigating officer at the time of submission. If this status changes, the investigating officer should notify the laboratory and submit any attainable standards.*
- II. Known reference standards may be a blood standard (drawn by medical personnel) and submitted in either dried (preferred) or liquid form or a buccal standard (swabbing from the inside of the cheek) collected from an individual.*
- III. Known reference standards for additional elimination purposes (e.g., spouse, companion, owners, or relatives) may also be requested.*

Major Eddie Johnson retires

In August of 2011 Captain Eddie Johnson was promoted to the rank of Major and assigned as the Forensic Troop Commander. He remained in this command position until his retirement September 1. Major Johnson had 32 years of service with KSP. At his urging, the first edition of the laboratory newsletter was published in July 2013. His hope was for it to be used as a venue to provide information about the laboratory and its processes in order to foster more understanding between the laboratory, police agencies and the courts. Along with the newsletter he was also an active participant in the Media Relations film clip featuring our lab personnel. During his tenure at the lab he sought out solutions to laboratory system issues and always wanted the best for the personnel.

We dedicate this edition to Major Johnson and hope that we are surpassing his goal.

Laboratory Management

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SUGGESTIONS WELCOME!!

Please contact laura.sudkamp@ky.gov with comments or suggestions.

QUICK LINKS

[KSP Lab website \(previous newsletters\)](#)

[Physical Evidence Collection Guide](#)

[Laboratory FAQs](#)

[Combined DNA Index System \(CODIS\)](#)

[Scientific Working Group on DNA](#)

TRAINING

[NIJ Training](#)

[ForensicED](#)

[Center for Human ID](#)

[National Forensic Science Technology](#)